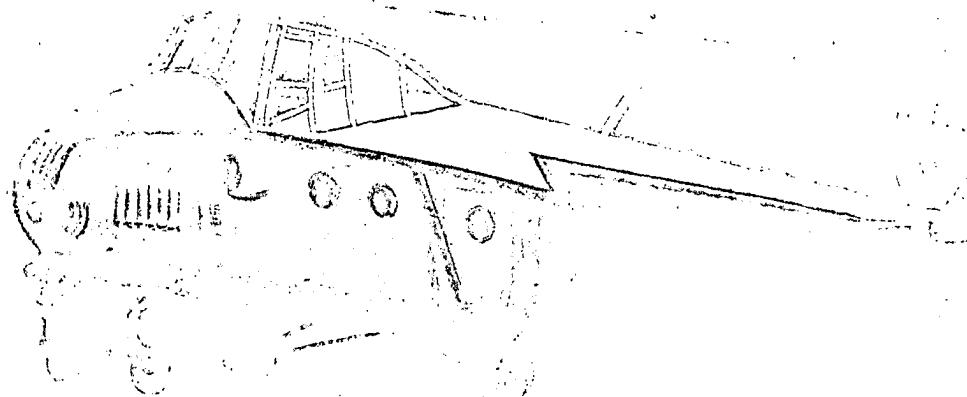


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Bernard
Moor

PRINCIPAL PERFORMANCE

and

WEIGHT DATA

of the Mi-4 HELICOPTER
(1959)

(Supplement to the Mi-4 Helicopter Description)

-I-

The performance of the Mi-4 helicopter being produced now is improved as compared to the helicopters of earlier production due to some structural modifications and development.

Performance of the Mi-4 Helicopter fitted with Metal

Blades

Maximum speed (at S.L. and up to 1,000 m.)	^{3,280 ft} 15,990 lbs.	131 mph 210 km./hr.
with normal take-off weight of 7,250 kg.....	^{16,750 lbs.}	
with take-off weight of 7,600 kg. in overload condition		106 mph 170 km./hr.
Minimum speed		0
Service ceiling		
with normal take-off weight of 7,250 kg.....	^{15,990 lbs.} ^{16,750 lbs.}	19,670 ft. 6,000 m.
with take-off weight of 7,600 kg. in overload condition		16,400 ft. 5,000 m.
Hovering ceiling (with ground effect)		
with normal take-off weight of 7,250 kg.....	^{15,990 lbs.}	9,840 ft. 3,000 m.
with take-off weight of 7,600 kg. in overload condition	^{16,750 lbs.}	6,555 ft. 2,000 m.
Climb (with normal take-off weight)		
to: 1,000 m.	^{3,280 ft}	4 min.
3,000 m.	^{9,840 ft}	11.6 min.
6,000 m.	^{19,670 ft}	32 min.
Practical range and cruising speed with normal fuel load of 1323 lbs.		
600 kg. and 5% reserve		
with normal take-off weight of 7,250 kg.	^{15,990 lbs.}	298 mi. 480 km. 160 km./hr.
with take-off weight of 7,600 kg. in overload condition	^{16,750 lbs.}	99.5 mph 289 mi. 465 km. 160 km./hr. 99.5 mph

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Practical endurance and economic speed with normal fuel load
^{1323 lbs.}
 of 600 kg. and 5% reserve

with normal take-off weight of 7,250 kg.	^{15,990 lbs.}	<u>3 hrs 20 min.</u>
		<u>120 km./hr.</u>
with take-off weight of 7,600 kg. in overload condition	^{16,750 lbs.}	^{74.5 mph}
		<u>3 hrs 0.5 min.</u>

120 km./hr.

^{74.5 mph}

The Mi-4 Performance

Maximum speed (at S.L. and up to 1,000 m.)	^{3,280 ft}	
with normal take-off weight of 7,250 kg.....	^{15,990 lbs.}	^{124 mph}
with take-off weight of 7,600 kg. in overload condition	^{16,750 lbs.}	^{200 km./hr.}
		^{106 mph}

^{170 km./hr.}

Minimum speed 0

Service ceiling

	^{15,990 lbs.}	^{18,040 ft.}
with normal take-off weight of 7,250 kg.....		^{5,500 m.}
with take-off weight of 7,600 kg. in overload condition	^{16,750 lbs.}	^{14,750 ft.}

^{4,500 m.}

Hovering ceiling (with ground effect)

	^{15,990 lbs.}	^{6,555 ft.}
with normal take-off weight of 7,250 kg.....		^{2,000 m.}
with take-off weight of 7,600 kg. in overload condition	^{16,750 lbs.}	^{3,280 ft.}

^{1,000 m.}

Climb (with normal take-off weight)

to: 1,000 m.	^{3,280 ft.}	^{4.6 min.}
3,000 m.	^{9,040 ft}	^{13.2 min.}
5,500 m.	^{18,040 ft}	^{33.1 min.}

Practical range and cruising speed with normal fuel load of
^{1323 lbs.}
 600 kg. and 5% reserve

with normal take-off weight of 7,250 kg.....	^{15,990 lbs.}	^{255 mi.}
		^{410 km.}
with take-off weight of 7,600 kg. in overload condition	^{16,750 lbs.}	^{160 km./hr.}

^{99.5 mph}

^{246 mi.}
^{395 km.}
^{160 km./hr.}
^{99.5 mph}

-3-

Practical endurance and economic speed with normal fuel load
of 600 kg. and 5% reserve

with normal take-off weight of 7,250 kg. with take-off weight of 7,600 kg. in overload condition	15,990 lbs. 16,750 lbs. 16,750 lbs.	2 hrs. 55 min. 120 km./hr. 74.5 mph
		2 hrs. 40min. 120 km./hr. 74.5 mph

The Mi-4 Weight Data

1. Normal take-off weight	15,990 lbs.
2. Take-off weight in overload condition	16,750 lbs.
3. Weight empty (standard Mi-4 helicopter) ...	10,720 lbs.
4. Full load (normal)	4,860 kg.
5. Full load (overload)	5,270 lbs.
	2,390 kg.
	6,040 lbs.
	2,740 kg.

including:

pilot	176.5 lbs.
oil	80 kg.
	242.5 lbs.
	110 kg.

Fuel reserve and fuel required for take-off and landing ..

.....	202.5 lbs.
.....	100 kg.
full load (normal)	4,630 lbs.
.....	2,100 kg.
full load (overloaded)	5,400 lbs.
	2,450 kg.

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L I S T

of auxiliary equipment (not included in standard weight empty,
but which can be installed by the customer's request as a
part of useful load)

Radio Equipment 303 lbs. 137.5 kg.

VHF transmitting-receiving radio set (РСМУ-3)

Automatic direction finder (АРК-5)

Radio altimeter(PB-2)

Interphone equipment (СМУ-2)

Flux-gate gyro compass (ГИК-1)

Co-pilot's Instrument panel 6.2 lbs. 2.8 kg.

Artificial horizon (АИК-47Б)

Air speed indicator (УС-250)

Instrument Panel in Cargo Compartment 3.3 lbs. 1.5 kg.

Clock (ABPM)

Altimeter (ВЛ-12)

Panel structure and lighting equipment

Troop-carrier, Freight and Ambulance Equipment ... 727.5 lbs. 330.0 kg.

Troop seats (for 16 men)

Static cables (2)

Loading ramps

Vehicle wheel chocks (8)

БЛ-47 Winch (hand operated)

Vehicle jacks

Cargo tie-down cables

Stretchers (8)

First aid kit, thermoses and drinking pots

Swivel brackets for stretchers

Medical attendant's table

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KII-2I Oxygen regulators for the wounded (8)

Swing-in hoist with БЛ-47 winch

Swing-in hoist with АИТ-2 electrically-operated winch

Cabin combustion heater

Cabin heating ducts

Cargo doors light

Warning horn in cargo compartment

Ladder in cargo compartment

External cargo sling installation

Equipment 320 kg.

706 lbs.

320 kg.

Landing light

Taxying light

Flare magazine

Blade de-icing system

Alcohol for de-icing system

Pilots' oxygen equipment

Autopilot

Auxiliary fuel tank (500 litres)

Auxiliary fuel tank (2,000 litres)

Windscreen de-icing system

Ventral container

15.4 lbs.

7.0 kg.

Neutral Gas System

Piping

Gas bottle

Equipment for 11-passenger version (without a toilet

room) 350 kg.

772 lbs.

Mi-4 HELICOPTER

HOVERING CEILING VS. GROSS WEIGHT
(IN STANDARD AIR WITH TAKE-OFF POWER)

WEIGHTS	LBS.
WEIGHT EMPTY	10,730.0
OIL	242.5
Pilot	176.5
FUEL RESERVE	220.5
	11,370.5

ALL METAL BLADES

HOVERING CEILING - 1000 FT.

GROSS WEIGHT - 1000 LBS.

11,370 LBS.

0

2

4

6

8

10

11

12

13

14

15

16

17

18

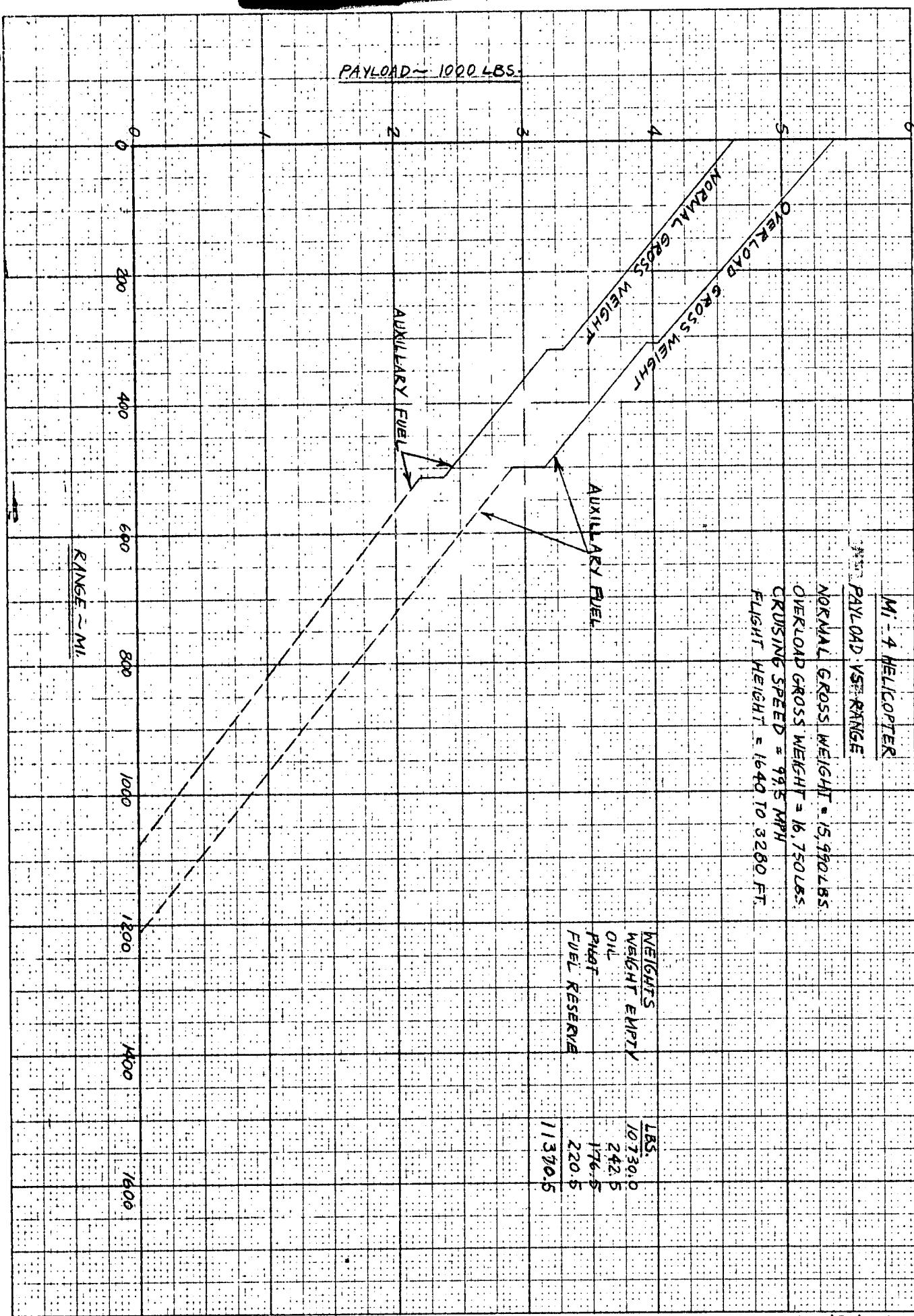
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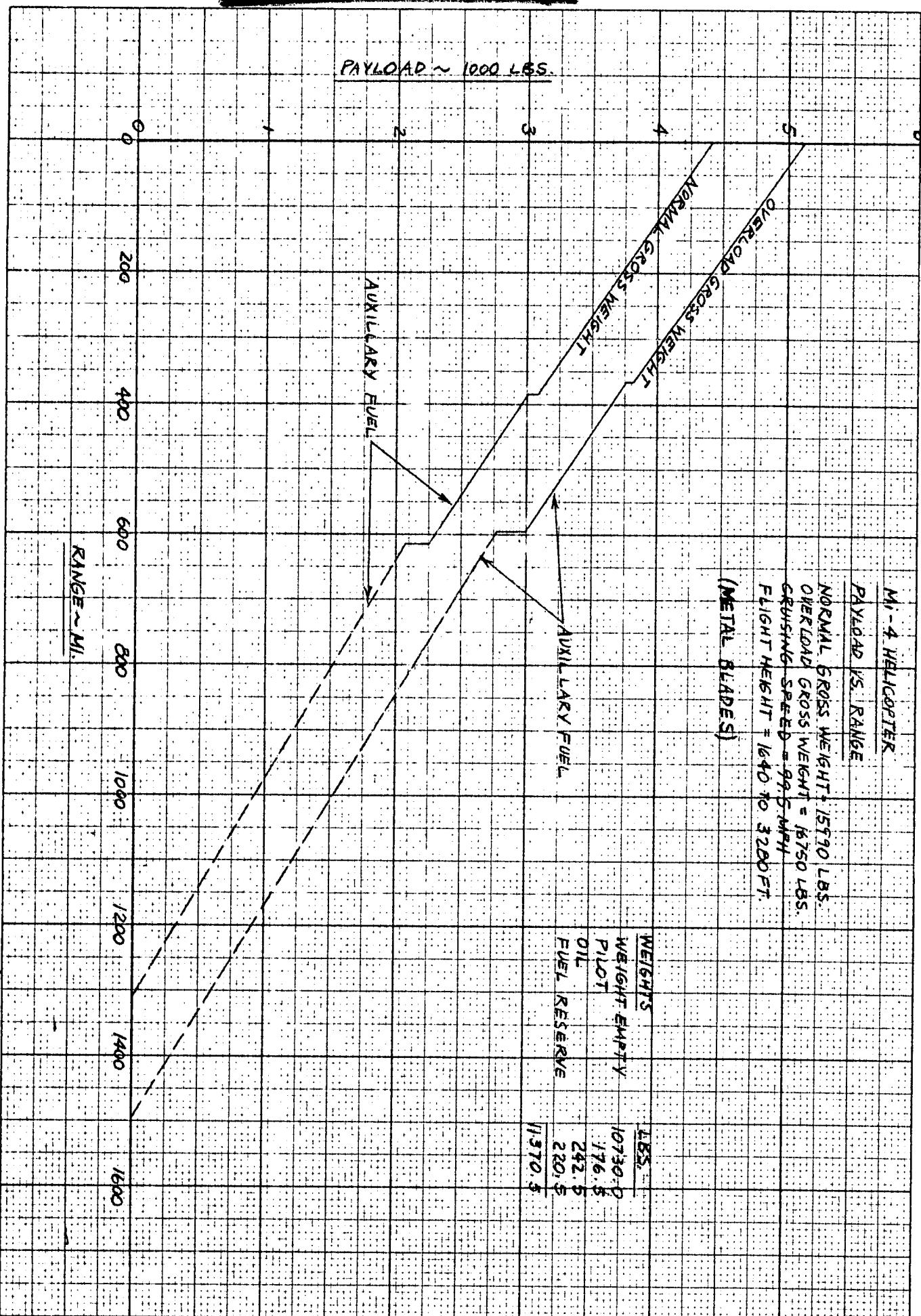
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GROSS WEIGHT - 1000 LBS.



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Approximate Operating Cost

of the Mi-4 Helicopter

Operating costs depend considerably on the type of operation, operating conditions and the number of hours flown per year. These factors, in turn, affect the number of pilots and mechanics, amount of depreciation and insurance.

The operating costs are calculated on a monthly basis. "Daily" or "Yearly" costs can easily be calculated as indicated below.

1. Crew Members

The number of pilots required will depend on duties, the time of day or night and the number of days per week when the helicopter is operated. General formula for calculation of the crew monthly total salary:

number of pilots x monthly salary = dollars per month.

The number of mechanics depends upon the number of flights performed and the number of flying days per week, as well as the time of day or night when the mechanics work. Hence, mechanics' total salary is the number of mechanics x monthly salary = dollars per month.

2. Fuel and Oil

Fuel: Fuel consumption at cruising rating is approximately 260 litres per hour.

Litres per hour x litre cost = dollars per hour.

Lubricants: Their cost is estimated as 5% of fuel cost. Hence, 5% of cost (c) = dollars per hour.

Total fuel and oil cost:

Item (C) + Item () = dollars per hour.

Number of flying hours per month x dollars, Item (e) = dollars per month.

3. Parts Replacement

Experience in the helicopter operation shows that the replacement of parts, including depreciation, is estimated at 22.60 dollars per hour. Hence, the number of flying hours per month x 22.60 dollars per hour = dollars per month.

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4. Engine Overhaul Cost

The cost of the engine overhaul including necessary replacement of parts is estimated at 7.30 dollars per hour, or the number of flying hours per month \times 7.30 dollars per hour = dollars per month.

5. Depreciation

Depreciation costs are approximately estimated at 33.00 dollars per flying hour.

The number of flying hours per month \times depreciation cost = dollars per month.

Operating cost of the Mi-4 helicopter is calculated by summing up all the costs totaled as follows:

pilots' salary	dollars per month
mechanics' salary	"
fuel and oil	"
parts replacement	"
engine overhaul cost	"
depreciation	"
total operating cost per month	"